

REMARKS

As a preliminary matter, applicants appreciate the noted allowability of claims 53, 54, 57, 60, 66-68, 73, 74, 76, 78, 82, 86, 89, 90, 92, 94, 96 and 98.

New claims 100-108 have been added to provide the further clarification. Claims 100, 102, 103, 105 and 107 are supported by the specification, e.g., on page 17, lines 17-28, and claims 101, 104, 106 and 108 are supported by the specification, e.g., on page 21, lines 17-24. The timer value can include various values such as a free running timer and a free running counter. The timer values can indicate at least a time of transition of at least one input on the I/O device and/or a time of transmission of at least one communications packet from the I/O device to the revenue meter. The various timer values can be used to help overcome problems with known devices that are difficult to configure and/or require the installation of extensive additional wiring. See, e.g., Background page 3, line 30 to page 4, line 31. The timer values of the present invention provide an easily implemented nexus between the revenue meter 20 and the external I/O and communications device 88. See, e.g., Specification, pages 17 and 21.

With this amendment, claims 29, 38 and 72 have been amended for clarity. Claims 45, 46, 73, 74, 78, 79, 81, 82, and 84-89 have been amended for stylistic reasons. Claims 109-112 have been added and correspond (in order) to previous claims 60, 74, 73 and 89 which the Office Action indicated would be patentable if re-written in independent form.

Claims 29, 38, 45, 46, 52, 55, 56, 59, 63, 69-72, 75, 77, 83 and 84 stand rejected under 35 U.S.C. §102(e) as being anticipated by Griffin et al. (U.S. Patent No. 6,429,785). Applicants respectfully traverse this rejection because Griffin et al. fails to disclose or suggest the claimed "I/O device."

Griffin et al. purports to disclose a revenue meter and a control programmer for connection with the meter. The control programmer communicates through various communication ports (see Griffin et al., col 21, lines 1-9). The control programmer includes a user interface (col 21, line 10). The control programmer also includes a programming device (col 21, lines 38-47). The control programmer, user interface and

programming device of Griffin et al., cooperate to program and configure the revenue meter (col 21, lines 1-53).

Conversely regarding claims 29, 38 and 72, the present invention claims "an I/O device" comprising at least one I/O port, i.e. an input and output device that uses I/O device signals, e.g., states, to transfer information. For example, a digital I/O device sends and/or receives on and off states and an analog I/O device sends and/or receives a state depending on (for example) the amperage of a signal. These states are provided through I/O ports. The states are used to control relays and read readings for example. As stated in the Background section, using an industry standard communications protocol to communicate from the meter to an external device can create problems in that known standard communications interfaces typically do not provide a way to timestamp the absolute time that the input state was recorded, which may be important to various functions of the revenue meter. Even when this capability is provided, there is typically no way to ensure that the absolute time reference of the external device and the revenue meter are the same. In addition, standard communications interfaces are typically bus architectures. Therefore, transferring information from the external device to and from the meter may be delayed by other devices using the bus. Also, known external devices are often complicated to configure. In addition, standard external devices must have dedicated power supplies which means additional wiring must be installed.

Griffin et al. does not disclose or suggest an I/O device comprising at least one I/O port, therefore applicants respectfully request that the rejection of claims 29, 38 and 72 over Griffin et al. be withdrawn.

Claims 45, 46, 52, 55, 56, and 75 depend from claim 38 and therefore should be allowed for at least the reasons given above.

Claims 59 and 77 depend from claim 38 and therefore should be allowed for at least the reasons given above. In addition, Griffin et al. fails to disclose an interface link comprising an RS-422 type serial communications link.

Claims 63, 65, 70, 84, and 71 depend from claim 38 and therefore should be allowed for at least the reasons given above.

Claims 44, 64, 81, 85, 87, 88, 91, 93, 95, 97, and 99 stand rejected under 35 U.S.C. §103(a) as being obvious in view of Griffin et al. Applicants respectfully traverse this rejection for at least the reasons given above for the independent claims from which these claims depend.

In addition regarding claims 44, 64, 81, 85, 87, 88, 91, 93, 95, 97, 99 the Office Action indicates that it is well known in the art to use the power from a utility meter to power devices. Applicants disagree. Indeed, to the best of applicants' knowledge it is not well known in the art to power a device physically separate from a utility meter from the utility meter. It is requested that further support for this assertion be provided. In addition, regarding claims 85, 87, 88, 91, 93, 95, 97 and 99, the Office Action has failed to provide any reasons as to why Griffin et al. renders the additional features of these claims obvious. Reconsideration of the allowability of these claims is respectfully requested.

All the rejections in the office action have been addressed and no new matter has been added. Applicants submit that the application is in condition for allowance and notice to this effect is hereby requested. The examiner is invited to contact the undersigned attorney at (312) 321-4224 if there are any outstanding issues that could be resolved through a telephone conference.

Respectfully submitted,



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Appendix A
VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Please amend claims 29, 38, 45, 46, 72-74, 78, 79, 81, 82, and 84-89 as follows:

--29. **(Four Times Amended)** A metering apparatus, said metering apparatus measuring the delivery of electrical energy from an energy supplier to a consumer through a first electric circuit, said metering apparatus comprising:

a revenue meter enclosed within an enclosure;
an I/O device physically separate from said enclosure;
an interface link operative to couple said I/O device to said revenue meter;
said I/O device further comprising a processor; said processor operative to provide at least one first timer value to said revenue meter; and
said I/O device further comprising at least one I/O port.

38. **(Thrice Amended)** A method of operating a metering apparatus, comprising:

[(a)] measuring the delivery of electrical energy from an energy supplier to a consumer through an electric circuit using a revenue meter, said revenue meter enclosed within an enclosure;

[(b)] locating an I/O device external to said enclosure of said revenue meter;

providing at least one I/O port on said I/O device;

[(c)] wherein the I/O device includes a processor; and

[(d)] providing at least one first timer value from the processor to said revenue meter.

45. **(Amended)** The method of claim 38 further comprising:

[(e)] accommodating connection of at least one communications signal from said revenue meter on said I/O device.

46. **(Twice Amended)** The method of claim 45 further comprising:

[(f)] communicating at least one communications signal from said revenue meter via an interface link.

72. **(Thrice Amended)** A method of operating a metering apparatus, comprising:

[(a)] measuring the delivery of electrical energy from an energy supplier to a consumer through an electric circuit using a revenue meter, said revenue meter enclosed within an enclosure;

[(b)] locating an I/O device external to said enclosure of said revenue meter;

[(c)] wherein the I/O device includes a processor;

wherein the I/O device comprises at least one I/O port;

[(d)] connecting an interface link between said revenue meter and said I/O device;

[(e)] communicating at least one I/O signal between said I/O device and said revenue meter via said interface link; and

[(f)] providing at least one first timer value from the processor to said revenue meter.

73. **(Amended)** The method of claim 72 wherein said I/O signal is indicative of the amount of current flowing into [said] at least one input of said I/O device.

74. **(Amended)** The method of claim 72 further comprising:

[(f)] generating a signal level corresponding to said I/O signal.

78. **(Amended)** The method of claim 72 further comprising:

[(f)] accurately timestamping transition times of at least one input of said I/O device.

79. **(Amended)** The method of claim 72 further comprising:

[(f)] detecting errors in said communication.

81. **(Amended)** The method of claim 72 further comprising:

[(f)] receiving power by said I/O device from said revenue meter.

82. **(Amended)** The method of claim 81 further comprising:

[(g)] accurately timestamping transition times of at least one input of said I/O device.

84. **(Amended)** The method of claim 72 further comprising:

[(f)] expanding said interface link to couple to at least one additional I/O device.

85 **(Amended)** The method of claim 84 further comprising:

[(g)] controlling the application of power to said I/O device with a second processor in said revenue meter.

86 (Amended) The method of claim 84 further comprising:

[(g)] sending at least one second timer value from said processor on said I/O device to said revenue meter, said at least one first timer value indicative of the time of transition of at least one input of said I/O device, and said at least one second timer value indicative of a time of transmission of at least one communications packet from said I/O device to said revenue meter.

87 (Amended) The method of claim 81 further comprising:

[(f)] controlling the application of power to said I/O device with a second processor in said revenue meter.

88 (Amended) The method of claim 72 further comprising:

[(f)] controlling the application of power to said I/O device with a second processor in said revenue meter.

89 (Amended) The method of claim 72 further comprising:

[(f)] sending at least one second timer value from said processor on said I/O device to said revenue meter, said at least one first timer value indicative of the time of transition of at least one input of said I/O device, and said at least one second timer value indicative of a time of transmission of at least one communications packet from said I/O device to said revenue meter.--